

IN THE CLAIMS:

On page 29, line 1, delete ~~Patent Claims~~ and insert:

C L A I M S

What is claimed is:

Please cancel claim 26, add a new claim 27 and amend claims 1-25 to read as follows:

1. (Currently Amended) A In a device for sorting different materials, comprising a conveyor belt and at least one sensor which is assigned to the conveyor belt and senses pieces of material in a location-dependent manner on the conveyor belt, and at least one actuator which sorts out pieces of material in accordance with signals of the at least one sensor in a location-dependent manner, the improvement comprising ~~characterized in that an~~ at least one electromagnetic actuator ~~is used, comprising~~ having at least one energizable coil ~~(10)~~ rotatably suspended about a shaft ~~(7)~~, said coil ~~(10)~~, starting from a basic position, performing a rotational movement about the shaft ~~(7)~~ in ~~the~~ a gap between a pair of first oppositely magnetized permanent magnets ~~(8)~~ to a second position in a gap between a pair of second oppositely magnetized permanent magnets

~~{9}~~, comprising a magnetic field which in the gap of the second permanent magnets ~~{9}~~ ~~extends~~ extending opposite to the in direction ~~of the~~ to a magnetic field in the gap of the first permanent magnets ~~{8}~~, the rotational movement of the coil ~~{10}~~ effecting an actuating operation for sorting out the a piece of material.

2. (Currently Amended) The sorting device according to claim 1, ~~characterized in that~~ wherein the at least one electromagnetic actuator is arranged at the a side of the conveyor belt ~~{30}~~.

3. (Currently Amended) The sorting device according to claim 1, wherein ~~or 2, characterized in that~~ the at least one electromagnetic actuator ~~{24}~~ is driven in a location-dependent manner so as to pivot an ejector ~~{15}~~ connected to the actuator ~~{24}~~ into the ~~transportation~~ transport path of the ~~correspondingly~~ a respective sensed piece of material for sorting out the piece of material.

4. (Currently Amended) The sorting device according to claim 1 3, wherein ~~characterized in that~~ the at least one electromagnetic actuator is arranged ~~behind~~ at the end of the conveyor belt ~~{30}~~ at the an outlet side, and that

wherein the ejector (15) is pivotable into the flight transport path of the ~~correspondingly~~ respective sensed piece of material.

5. (Currently Amended) The sorting device according to any ~~one of claims 1 to 4, characterized in that the~~ claim 1, wherein windings of the coil (10) extend in planes which are substantially positioned substantially perpendicular to the shaft (7).

6. (Currently Amended) The sorting device according to any ~~one of claims 1 to 5, characterized in that~~ claim 1, wherein the permanent magnets (6) are made from neodymium-iron boron.

7. (Currently Amended) The sorting device according to any ~~one of claims 1 to 6, characterized in that~~ claim 1, wherein the permanent magnets (6) are formed as plate-like ring segments.

8. (Currently Amended) The sorting device according to ~~claim 7, characterized in that~~ wherein the an inner radius

and the an outer radius of the ring segments have their origin at the shaft (7).

9. (Currently Amended) The sorting device according to any ~~one of claims 5 or 7, characterized in that~~ claim 5, wherein the coil (10) comprises two legs (17) which are radially oriented relative to the shaft (7).

10. (Currently Amended) The sorting device according to any ~~one of claims 1 to 9, characterized in that~~ claim 1, wherein the coil (10) is held on a carrier (11) which is suspended from the shaft (7), the end of the carrier (19) opposite to the coil (10) forming an adjusting ejecting member (15).

11. (Currently Amended) The sorting device according to any ~~one of claims 1 to 10, characterized in that~~ claim 1, wherein each of the respective permanent magnet pairs ~~magnets (6)~~ are held at the one side and at the other an opposite side of the gap, respectively, on a ~~respective~~ base plate (2), the base plates of the magnet pairs (2) forming parts of an exterior housing structure (1).

12. (Currently Amended) The sorting device according to claim 11, ~~characterized in that~~ wherein a bearing in which

the shaft (7) is held mounted is provided in each base plate (2).

13. (Currently Amended) The sorting device according to any ~~one of claims 1 to 12, characterized in that~~ claim 11, wherein the coil (10) is supplied with current by means of silicone-coated stranded wires (20).

14. (Currently Amended) The sorting device according to ~~claims 11 and 13, characterized in that~~ claim 12, wherein a respective stranded wire (20) is arranged at each side of the carrier (11) and connected to the housing structure (1).

15. (Currently Amended) The sorting device according to claim 11, ~~characterized in that~~ wherein the base plates (2) are spaced apart by a housing wall (4) enclosing the coil (10) and the permanent magnets (6).

16. (Currently Amended) The sorting device according to any ~~one of claims 1 to 15, characterized in that~~ claim 1, wherein at least one further pair of third oppositely magnetized permanent magnets (22) is provided of opposite pole to the pair of second permanent magnets (9), with a gap thereinbetween, and a further coil (40) is provided, said

further coil ~~{40}~~ being offset relative to the first coil ~~{10}~~ such that it is positioned closer to the pair of third permanent magnets ~~{22}~~ and is energized whenever a rotational movement takes place from the pair of second permanent magnets ~~{9}~~ to the pair of third permanent magnets ~~{22}~~.

17. (Currently Amended) The sorting device according to claim 16, ~~characterized in that~~ wherein the position of the coils ~~{10; 40}~~ between the respective pairs of permanent magnets ~~{8; 9; 22}~~ is used for an actuating operation.

18. (Currently Amended) The sorting device according to claim 1, ~~characterized in that~~ wherein the first and second pairs of permanent magnets ~~{8; 9}~~ ~~cover~~ extend over a sector of about 90°.

19. (Currently Amended) The sorting device according to claim 16, ~~characterized in that~~ wherein the three pairs of permanent magnets ~~{8; 9; 22}~~ ~~cover~~ extend over a sector of between 120° and 180°.

20. (Currently Amended) The sorting device according to ~~any one of claims 1 to 19,~~ ~~characterized in that~~ claim 1,

wherein in the basic position the coil ~~(10)~~ is ~~acted upon~~  
energized by ~~negative or positive~~ a voltage of a given  
polarity and the polarity thereof is reversed for ~~transfer~~  
movement from the basic position into the second position.

21. (Currently Amended) The sorting device according to  
claim 20, ~~characterized in that~~ wherein the coil ~~(10)~~ is  
energized for a return movement from the second position  
into the first position.

22. (Currently Amended) The sorting device according to  
claim 13, wherein the electromagnetic actuator is arranged  
in a housing, and wherein ~~or 14, characterized in that~~ the  
respective stranded wire ~~(20)~~ is ~~laid~~ arranged in a loop  
having a length several times the direct connection path  
between a connection point at the coil ~~(10)~~ and a connection  
point at the housing side.

23. (Currently Amended) The sorting device according to ~~any~~  
~~one of claims 1 to 22, characterized in that~~ claim 1,  
wherein a plurality of electromagnetic actuators ~~(24)~~ are  
arranged side by side, forming a modular unit.

24. (Currently Amended) The sorting device according to claim 23, ~~characterized in that~~ wherein the shafts ~~(7)~~ of the individual electromagnetic actuators ~~(24)~~ from which the coils ~~(10)~~ are suspended are positioned along a straight line.

25. (Currently Amended) The sorting device according to claim 4, wherein ~~in combination with claim 23 or claim 24,~~ ~~characterized in that the~~ at least one sensor field ~~(33)~~ senses pieces of material in a location-dependent manner on the conveyor belt ~~(30)~~ and, in accordance with signals of the sensor field ~~(33)~~, corresponding actuators ~~(24)~~ of a modular unit ~~(23)~~ arranged behind the end of the conveyor belt ~~(30)~~ at the outlet side are driven in a location-dependent manner to pivot an ejector ~~(15)~~ connected to the respective actuator ~~(24)~~ into the ~~flight~~ transport path of the ~~correspondingly~~ respective sensed piece of material.

26. (Canceled).

Please add the following new claim:



27. (New) A method of sorting different materials using a comprising a conveyor having a conveyor belt comprising at least one sensor which is assigned to the conveyor belt and senses pieces of material in a location-dependent manner on the conveyor belt, and at least one actuator which sorts out pieces of material in accordance with signals of the at least one sensor in a location-dependent manner, said method comprising the steps of:

(a) placing metal parts on the conveyor belt;

(b) sensing the presence and position of said metal parts;

(c) conveying the metal parts to at least one electromagnetic actuator having at least one energizable coil rotatably suspended about a shaft said coil starting from a basic position, performing a rotational movement about the shaft in a gap between a pair of first oppositely magnetized permanent magnets to a second position in a gap between a pair of second oppositely magnetized permanent magnets, a magnetic field in the gap of the second permanent magnets extending opposite in direction to a magnetic field in the gap of the first permanent magnets, the rotational

movement of the coil effecting an actuating operation for sorting out the metal parts; and

(d) energising the at least one electromagnetic actuator to remove selected ones of the metal parts.